



ATTORNEY DOCKET NO.: 0492611-0503 (MIT 10296)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Stellacci, et al. Examiner:
Serial No.: 10/688,867 Art Unit:
Filing Date: October 17, 2003
Title: NANOCONTACT PRINTING

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

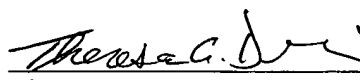
TRANSMITTAL LETTER

Enclosed are the following documents:

1. Form PTO-1449 (4 pages);
2. Information Disclosure Statement (6 pages);
3. Cited Art (51); and
4. Return Postcard

If any additional fees are required to be paid or if any overpayment has been made, please charge same to Deposit Account No. 03-1721.

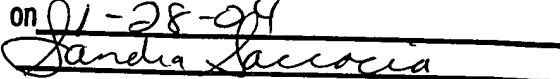
Respectfully submitted,


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Dated: January 28, 2004

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STATEMENT

Pursuant to the duty of disclosure under 37 C.F.R. §§1.56, 1.97 and 1.98, Applicant requests consideration of this Information Disclosure Statement.

Type of Statement

The present Information Disclosure Statement is:

- ☒ An *original* Information Disclosure Statement; or
☐ A *supplemental* Information Disclosure Statement.

| | |
|---|-------------------------|
| Certificate of Mailing | |
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| 1-28-04 | <i>Sandra Saccoccia</i> |
| Date | Signature |
| Sandra Saccoccia | |
| Typed or Printed Name of person signing certificate | |

Compliance with 37 CFR § 1.97

The present Information Disclosure Statement is being filed:

- ☒ Pursuant to 37 CFR § 1.97(b); no fee or certification is required:
- ☐ Within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d);
 - ☐ Within three months of the date of entry of the national stage as set forth in § 1.491 in an international application;
 - ☒ Before the mailing of a first Office action on the merits; or
 - ☐ Before the mailing of a first Office action after the filing of a request for continued examination under § 1.114.
- ☐ Pursuant to 37 CFR § 1.97(c) after the dates listed above but before the mailing date of any of a final action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application; Applicant hereby *either*:
- ☐ Certifies that *either*:
 - ☐ each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or
 - ☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making

reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.; or

☐ Includes herewith the fee set forth in § 1.17(p).

☐ Pursuant to 37 CFR § 1.97(d), after the mailing date of any final action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application; Applicant hereby *both*:

☐ Certifies that *either*:

☐ each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.; and

☐ Includes herewith the fee set forth in § 1.17(p).

Content of the Information Disclosure Statement

Applicant hereby makes of record in the above-identified application the reference(s) listed on the attached form PTO-1449 (modified). The order of presentation of the references should not be construed as an indication of the importance of the references.

Applicant includes copies of references as indicated below:

- ☒ A copy of each cited reference not indicated with an asterisk is included;
- ☐ Copies of references indicated with an asterisk on the attached form PTO-1449 are not included pursuant to 37 CFR § 1.98(d) because they were previously provided to the United States Patent Office in an Information Disclosure Statement that complies with 37 CFR § 1.98(a)-(c) and was submitted in the following patent application that is relied upon in the present case for an earlier effective filing date under 35 USC § 120:

| Serial Number | Filing Date | Status |
|---------------|-------------|--------|
| | | |

- ☐ Copies of English translations of one or more non-English references are included.

Applicant hereby makes the following additional information of record in the above-identified application:

Applicant certifies that the Information Disclosure Statement *either*:

- ☒ Does not contain non-English language citations;
- ☐ Does contain non-English language citations, of which the following is a concise explanation:
- ☐ Includes one or more translations of a non-English citation.

Remarks

The submission of this Information Disclosure Statement should not be construed as a representation that a search has been made.

The submission of this Information Disclosure Statement shall not be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in § 1.56(b) .

The submission of this Information Disclosure Statement shall not be construed as a representation that the information cited in the Statement is, or is considered to be, in fact, prior art as defined by 35 U.S.C. §102.

It is respectfully requested that:

1. The Examiner consider completely the cited information, along with any other information, in reaching a determination concerning the patentability of the present claims;
2. The enclosed form PTO-1449 be signed by the Examiner to evidence that the cited patent(s) and publication(s) has (have) been fully considered by the Patent and Trademark Office during the examination of this application; and
3. The citations for the patent(s) and publication(s) be printed on any patent which issues from this application.

Notwithstanding any statements by Applicants, the Examiner is urged to form his or her own conclusions regarding the relevance of the cited reference(s).

Respectfully submitted,

Dated: January 28, 2004



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| Form PTO-1449 (REV. 8-83) INFORMATION DISCLOSURE STATEMENT (Use separate sheets if necessary) | | U.S. Department of Commerce Patent and Trademark Office | | Atty. Docket: 0492611-0503 (MIT 10296) | | In re Application No. 10/688,867 | |
| | | | | Applicant: Stellacci, et al., | | | |
| | | | | Filing Date: October 17, 2003 | | Group: | |

| U.S. PATENT DOCUMENTS | | | | | |
|-----------------------|-----------------|---------------|-------------------|-------|----------|
| Examiner's Initials | U.S. Patent No. | Applicant | Issue Date | Class | Subclass |
| | 6,309,580 | Chou | October 30, 2001 | | |
| | 6,114,099 | Liu et al. | September 5, 2000 | | |
| | 6,020,047 | Everhart | February 1, 2000 | | |
| | 5,772,905 | Chou | June 30, 1998 | | |
| | 5,512,131 | Kumar et al. | April 30, 1996 | | |
| | 5,079,600 | Schnur et al. | January 7, 1992 | | |

| U.S. PATENT APPLICATIONS | | | | | |
|--------------------------|---------------------|---------------|-------------------|--------|-----------|
| Examiner's Initials: | Publication Number: | Applicant: | Publication Date: | Group: | Art Unit: |
| | 2003/0080472 | Chou | May 1, 2003 | | |
| | 2003/0080471 | Chou | May 1, 2003 | | |
| | 2003/0068446 | Mirkin et al. | April 10, 2003 | | |
| | 2003/0034329 | Chou | February 20, 2003 | | |
| | 2002/0167117 | Chou | November 14, 2002 | | |

| FOREIGN PATENT DOCUMENTS | | | | | |
|--------------------------|--------------|---------|------|-------------|----|
| Examiner's Initials | Document No. | Country | Date | Translation | |
| | | | | Yes | No |
| | | | | | |

| OTHER DOCUMENTS | |
|---------------------|--|
| Examiner's Initials | Citation (Including Author, Title, Date, Pertinent Pages, Etc.) |
| | Amro, et al., "Patterning Surfaces Using Tip-Directed Displacement and Self-Assembly", <i>Langmuir</i> , 16 : 3006-3009, 2000. |
| | Andre, et al., "Quantum Chemistry and Molecular Engineering of Oligomeric and Polymeric Materials for Optoelectronics", <i>Chem. Rev.</i> 91 : 843-865, 1991. |
| | Austin, et al., "Fabrication of Nanocontacts for Molecular Devices Using Nanoimprint Lithography", <i>J. Vac. Sci. Technol.</i> 20 (2): 665-667, 2002. |
| | Bashir, et al., "DNA-Mediated Artificial Nanobiostructures: State of the Art and Future Directions", <i>Superlattices and Microstructures</i> , 29 (1): 1-16, 2001. |
| | Bruckbauer, et al., "Writing with DNA and Protein Using a Nanopipet for Controlled Delivery", <i>J. Am. Chem. Soc.</i> 124 : 8810-8811, 2002. |

INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

Applicant: Stellacci, et al.,

Filing Date:
October 17, 2003

Group:

Chappert, et al., "Planar Patterned Magnetic Media Obtained by Ion Irradiation", *Science*, **280**: 1919-1922, 1998.

Chen, et al., "Nanofabrication: Conventional and Nonconventional Methods", *Electrophoresis*, **22**: 187-207, 2001.

Chou, et al., "Ultrafast and Direct Imprint of Nanostructures in Silicon", *Nature*, **417**: 835-837, 2002.

Demers, et al., "Orthogonal Assembly of Nanoparticle Building Blocks and Dip-Pen Nanolithographically Generated Templates of DNA", *Angew. Chem. Int. Ed.* **40**: 3071-3073, 2001.

Demers, et al., "Direct Patterning of Modified Oligonucleotides on Metals and Insulators by Dip-Pen Nanolithography", *Science*, **296**: 1836-1838, 2002.

Demers, et al., "Combinatorial Templates Generated by Dip-Pen Nanolithography for the Formation of Two-Dimensional Particle Arrays", *Angew. Chem. Int. Ed.* **40**(16): 3069-3071, 2001.

Folkers, et al., "Phase Behavior of Two-Component Self-Assembled Monolayers of Alkanethiolates on Gold", *J. Phys. Chem.* **98**: 563-571, 1994.

Fuierer, et al., "Patterning Mesoscale Gradient Structures with Self-Assembled Monolayers and Scanning Tunneling Microscopy Based Replacement Lithography", *Adv. Mater.* **14**(2): 154-157, 2002.

Gonsalves, et al., "Organic-Inorganic Nanocomposites: Unique Resists for Nanolithography", *Adv. Mater.* **13**(10): 703-714, 2001.

Gorman, et al., "Chemically Well-Defined Lithography Using Self-Assembled Monolayers and Scanning Tunneling Microscopy in Nonpolar Organothiol Solutions", *Langmuir*, **16**: 6312-6316, 2000.

Hanvey, et al., "Antisense and Antigene Properties of Peptide Nucleic Acids", *Science*, **258**: 1481-1485, 1992.

Heller, et al., "DNA Microarray Technology: Devices, Systems, and Applications", *Annu. Rev. Biomed. Eng.* **4**: 129-153, 2002.

Hoeppener, et al., "Metal Nanoparticles, Nanowires, and Contact Electrodes Self-Assembled on Patterned Monolayer Templates-A Bottom-up Chemical Approach", *Adv. Mater.* **14**: 1036-1041, 2002.

Hong, et al., "Multiple Ink Nanolithography: Toward A Multiple-Pen Nano-Plotter", *Science*, **286**: 523-525, 1999.

Joachim, et al., "Is There a Minimum Size and a Maximum Speed for a Nanoscale Amplifier?" *Annals. NYAS Online*, **852**: 243-256, 1998.

Johnson, et al., "Ordered Mesoporous Polymers of Tunable Pore Size from Colloidal Silica Templates", *Science*, **283**: 963-965, 1999.

Lee, et al., "Protein Nanoarrays Generated by Dip-Pen Nanolithography", *Science*, **295**: 1702-

INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

Applicant: Stellacci, et al.,

Filing Date:
October 17, 2003

Group:

1705, 2002.

Liu, et al., "Production of Nanostructures of DNA on Surfaces", *NANO Letters*, **2**(8): 863-867, 2002.

Liu, et al., "Three-Dimensional Nanostructure Construction via Nanografting: Positive and Negative Pattern Transfer", *NANO Letters*, **2**(9): 937-940, 2002.

Liu, et al., "Nanofabrication of Self-Assembled Monolayers Using Scanning Probe Lithography", *Acc. Chem. Res.* **33**: 457-466, 2000.

Maoz, et al., "Constructive Nanolithography", Inert Monolayers as Patternable Templates for In-Situ Nanofabrication of Metal-Semiconductor-Organic Surface Structures-A Generic Approach", *Adv. Mater.* **12**(10): 725-731, 2000.

Maynor, et al., "Au "Ink" for AFM "Dip-Pen" Nanolithography", *Langmuir*, **17**: 2575-2578, 2001.

Melosh, et al., "Ultrahigh-Density Nanowire Lattices and Circuits", *Science*, **300**: 112-115, 2003.

Nyffenegger, et al., "Nanometer-Scale Surface Modification Using the Scanning Probe Microscope: Progress Since 1991", *Chem. Rev.* **97**: 1195-1230, 1997.

Park, et al., "Array-Based Electrical Detection of DNA with Nanoparticle Probes", *Science*, **295**: 1503-1506, 2002.

Piner, et al., "Dip-Pen" Nanolithography", *Science*, **283**: 661-663, 1999.

Schwartz, et al., "Molecular Transport from an Atomic Force Microscope Tip: A Comparative Study of Dip-Pen Nanolithography", *Langmuir*, **18**: 4041-4046, 2002.

Stutzmann, et al., "Self-Alligned, Vertical-Channel, Polymer Field-Effect Transistors", *Science*, **299**: 1881-1884, 2003.

Sun, et al., "Nanoscale Molecular Patterns Fabricated by Using Scanning Near-Field Optical Lithography", *J. Am. Chem. Soc.*, **124**(11): 2414-2415, 2002.

Taton, et al., "The DNA-Mediated Formation of Supramolecular Mono-and Multilayered Nanoparticle Structures", *J. Am. Chem. Soc.* **122**: 6305-6306, 2000.

Taton, et al., "Scanometric DNA Array Detection with Nanoparticle Probes", *Science*, **289**: 1757-1760, 2000.

Taton, et al., "Two-Color Labeling of Oligonucleotide Arrays via Size-Selective Scattering of Nanoparticle Probes", *J. Am. Chem. Soc.* **123**: 5164-5165, 2001.

Watterson, et al., "Practical Physical Aspects of Interfacial Nucleic Acid Oligomer Hybridisation for Biosensor Design", *Analytica Chimica Acta*, **469**: 115-127, 2002.

Xia, et al., "Unconventional Methods for Fabricating and Patterning Nanostructures", *Chem. Rev.* **99**: 1823-1848, 1999.

Xia, et al., "Soft Lithography", *Annu. Rev. Mater. Sci.*, **28**: 153-184, 1998.

Form PTO-1449
(REV. 8-83)

U.S. Department of Commerce
Patent and Trademark Office

Atty. Docket:
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(MIT 10296)

In re Application No.
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Filing Date:
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Group:

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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